MONTANA DEPARTMENT OF REVENUE
COMPLIANCE, VALUATION & RESOLUTION

May 2002

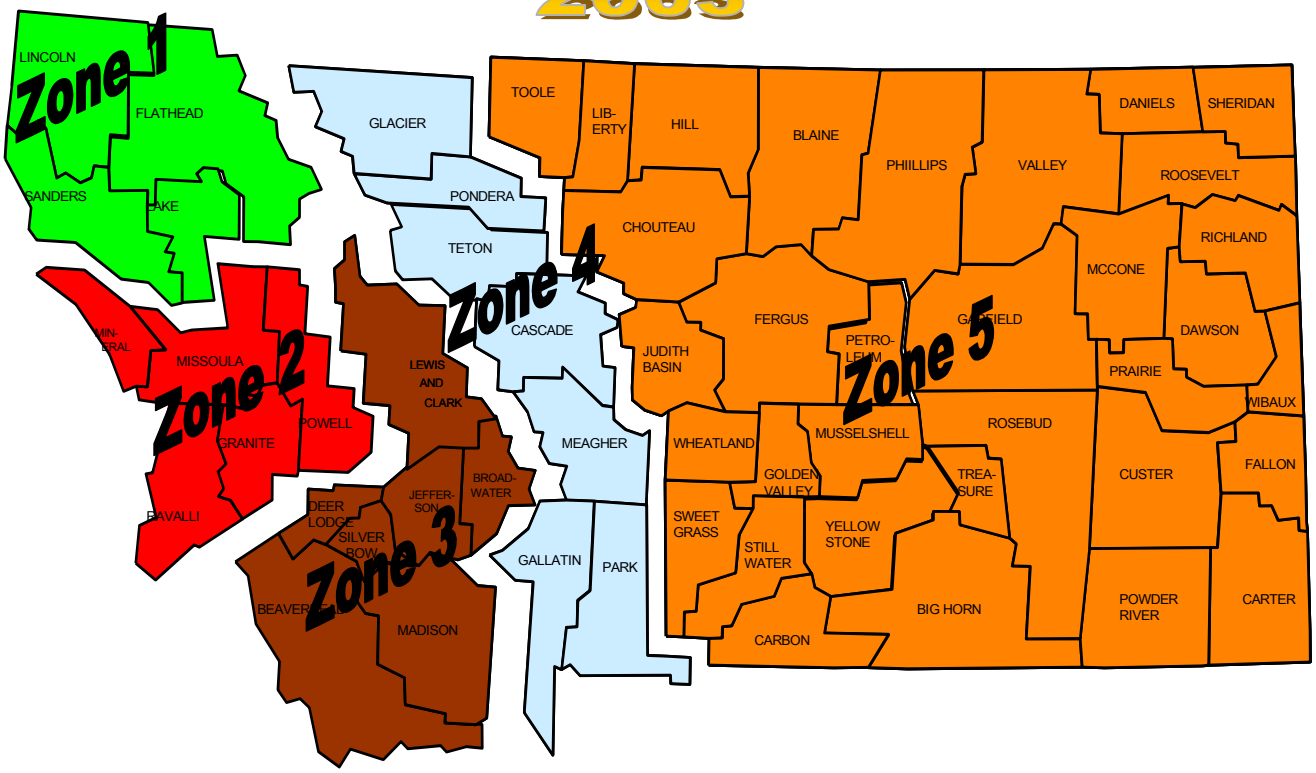
FORESTLAND REAPPRAISAL REPORT

FORESTLAND REAPPRAISAL REPORT 2003

Revised 5-16-02

FOREST VALUATION ZONES

2003



ACKNOWLEDGEMENTS

With great and sincere appreciation, we thank the following contributors to the forestland reappraisal project.

Montana Department of Natural Resources & Conservation- Division of Forestry
Dr. David Jackson Professor Emeritus, Natural Resource Policy & Forest Economics, University of Montana
Montana Wood Products Association
Montana Tree Farmer's Association
Forest Owner's Association

DEPARTMENT OF REVENUE
FORESTLAND REAPPRAISAL REPORT
FEBRUARY 2002

STATE OF MONTANA

JUDY MARTZ, GOVERNOR

MONTANA DEPARTMENT OF REVENUE

KURT G. ALME, DIRECTOR

COMPILED BY

COMPLIANCE, VALUATION & RESOLUTION

RANDY WILKE, PROCESS LEAD
DOLORES COONEY, PROCESS LEAD

SAM W. MITCHELL BUILDING
125 N. ROBERTS
PO BOX 5805
HELENA, MONTANA 59620
Home page: http//www.discoveringmontana.com/revenue

RANDY PIEARSON, FORESTLAND VALUATION SPECIALIST
BRAD SIMSHAW, SENIOR TAX POLICY ANALYST

Executive Summary

Introduction

On January 1, 2003, the department will implement new forestland valuation schedules. Year 2003 reappraisal values ***decrease*** in forest valuation zones 1 and 2. The 2003 reappraisal values in zones 1 and 2 will be fully implemented in 2003 and remain frozen for the duration of the reappraisal cycle.

Year 2003 reappraisal values ***increase*** in forest valuation zones 3, 4 and 5. The difference between the 1997 reappraisal values in zones 3, 4 and 5 and the 2003 assessed values will be phased–in incrementally over the next six years. Assessed values in zones 3, 4 and 5 will equal the 2003 reappraisal values in year 2008.

Provided there are no legislative changes to class 10 property, statewide assessed values will see a 4.55 percent decrease because of reappraisal in year 2003. The reason for this drop is threefold. First, decreased values in western Montana will be fully implemented in 2003. Second, increased values in central and eastern Montana will not be fully implemented until year 2008. Third, the majority of forest acres and forest valuation in Montana resides in valuation zones 1 and 2.

In year 2008, the full impacts of the statewide reappraisal will leave assessed values approximately 0.42 percent less than the year 2002 values. The small decrease in assessed values in western Montana will more than offset the double-digit valuation increases in central and eastern Montana. Again, that could change should there be legislative changes to class 10 property during intervening years.

Key Changes in Valuation Data - 1997 to 2003

- In western Montana, stumpage values continued their downward trend from the end of the previous base period.
- Forest costs increased in four of the five valuation zones. Forest valuation zone 4 was the exception, where forest costs decreased $0.53 per acre from the 1997 reappraisal cycle.
- Grazing lease income and the associated grazing costs increased from the previous reappraisal cycle due to increasing grazing fees on private land in Montana.
- The discount rate component of the capitalization rate dropped significantly from 9.83% for the 1997 reappraisal to 8.18% for the 2003 reappraisal.
- The relationship between appraisal values and the forestland tax decreased significantly from the 1994 reappraisal cycle to the 1997 reappraisal cycle. Therefore, the effective tax rate component of the capitalization rate went from a

range of 0.31 – 0.54 percent in the 1997 reappraisal cycle to .21 – .27 percent in the 2003 reappraisal cycle.
- The gap in appraised values between western Montana and central and eastern Montana will continue to decrease throughout the 2003 reappraisal cycle.

Reappraisal Summary

Stumpage values drop significantly in forest valuation zones 1 & 2 from those used in the 1997 reappraisal cycle. Stumpage values are relatively unchanged in forest zones 4 & 5 while forest valuation zone 3 incurs a modest increase. Even in Zone 3, the stumpage value increase is only $14.99 per thousand board feet (mbf).

The ratio of forest costs to gross timber income increases in four of the five valuation zones. This occurs because stumpage values decrease or are relatively stable. Additionally, four out of five valuation zones experience increased forest costs. Forest valuation zone 4 is the only zone that experiences a decrease in forest costs from the 1997 reappraisal cycle. The decrease in forest costs in Zone 3 is not only related to Division of Forestry fiscal resource reallocations to the Central Management Area, but also to changes in their accounting procedures.

The net agricultural income increases approximately 15 percent. However, agricultural income has only a minor impact on forestland valuation. The only agricultural income on forestlands is derived from grazing livestock. Net grazing income on forestlands is low due to poor carrying capacity on fully stocked stands and other factors related to mountainous terrain.

Forest valuation zones 1 & 2 see significant decreases to the total net income, while valuation zones 3, 4 and 5 experience only minor changes in the total net income.

The capitalization rate converts an on-going income stream to an estimate of present value. The net income (top half of the formula) is highly sensitive to the capitalization rate (bottom half of the formula). There are two components in a land capitalization rate – the discount rate and the effective tax rate. The source for the discount rate is defined in law and is highly sensitive to changing interest rates. The discount rate used for the 2003 reappraisal cycle is lower because interest rates have generally declined for a number of years.

Forestland assessed values have increased in every appraisal cycle. However, the general forest tax load has remained relatively constant. Therefore, the effective tax rate will also see a significant drop from the 1997 reappraisal cycle.

A change in the capitalization rate has an inverse relationship on the appraised value. In other words, the lower the capitalization rate, the higher the appraised value. The 2003 capitalization rates decrease significantly from the 1997 reappraisal cycle. The lower capitalization rates counteract lower income and higher costs for 2003.

The lower capitalization rates have the single most impact of any changes occurring in the 2003 reappraisal. If capitalization rates had remained unchanged from the 1997 reappraisal cycle, forestland assessed values would have decreased in four of the five valuation zones. If capitalization rates had remained unchanged, valuation zones 1 and 2 would have seen dramatic decreases in forestland valuation. Only in forest valuation zone 3 would assessed values have experienced a slight increase.

Historical Overview – Forest Land Valuation Changes

From 1975 to 1996, the overall per-acre taxable value of forestland experienced a steady decline from $2.19 per acre to $1.81 per acre. From 1997 to 1998, the average taxable value per acre increased slightly due to the two percent per year phase-in of assessed values mandated by the legislature. During this timeframe, there was no corresponding phase down to the forestland taxable percentage. From 1999 to the present time, the tax percentage rate for class 10 forestland has been phased-down to correspond to the increase in assessed valuation. The phase down of the class ten taxable percentage rate has allowed the average per-acre taxable value to return to $1.80 in 2002, further benefiting taxpayers with forestland. This has allowed Montana to maintain one of the lowest forestland tax levels in the United States. For example, Montana and Idaho share similar forest productivity tax systems. In 2001, Idaho's average forestland productivity tax was $5.07 per acre versus $0.86 per acre in Montana (490% less).

Each forestland reappraisal by the DOR has resulted in a significant increase in the assessed value. However, each increase in the assessed value was offset by a corresponding decrease in the taxable percentage rate.[1] The net result was that the average taxable value per acre has declined. However, just because the taxable value has declined does not mean tax liability has declined. Since 1975, the average statewide mill levy has increased by 135 percent (from 191.26 to 450.10 mills). In that same timeframe, inflation increased 229 percent. That means that the $2.19 taxable value per acre in 1975 would be worth $7.21 in 2002.

The 2003 reappraisal will mark the first time that the *statewide* forestland assessment will decrease. For this reason, that may have an affect on any legislative decisions regarding the class ten taxable percentage for the next reappraisal cycle.

[1] See History of Forestland Taxation on page 3.

Contents Page

2003
Forestland Valuation Schedules

2003 FORESTLAND VALUATION SCHEDULES					
CLASS	ZONE 1 $/ACRE	ZONE 2 $/ACRE	ZONE 3 $/ACRE	ZONE 4 $/ACRE	ZONE 5 $/ACRE
1	1,259.05	1,145.39	982.23	1,168.96	611.46
2	969.92	882.57	765.03	915.02	476.30
3	680.79	619.74	547.83	661.08	341.14
4	391.66	356.92	330.63	407.14	205.98

Forestland
Productivity Classes

Class I (excellent productivity):	85+	cuft/acre/year
Class II (good productivity):	65-84.99	cuft/acre/year
Class III (fair productivity):	45-64.99	cuft/acre/year
Class IV (poor productivity):	25-44.99	cuft/acre/year
Noncommercial:	<25	cuft/acre/year

Key Reappraisal Facts

2003 Reappraisal Cycle – January 1, 2003 through December 31, 2008

Data Time Frame - Data for each component in the formula is the most current five-year period for which information is available. The data used for the 2003 reappraisal cycle is state fiscal years 1997-2001.

Inflation Adjustment - Income and expense data is converted to 1996 constant dollars using the Gross Domestic Product Implicit Price Deflators and brought forward to the fourth fiscal quarter of 2001.

Valuation Phase-in – 2003 forestland values that are higher than the 1997 reappraisal values will be phased in over the length of the reappraisal cycle (1/6 increase per year for 6 years).

Forest Income - Forest income is the average stumpage value for each forest valuation zone. The average stumpage value is derived from multiple regression models, using state timber sales. Income is expressed in dollars per thousand board feet.

Forest Costs - Forest costs represent the cost of reforestation, slash disposal, forest fire assessments, timber stand improvement, timber harvest, forest practices, and administration. Forest costs, with the exception of the forest fire reduction fee and the severance tax, are calculated from budgeted accounts for those activities conducted by the Department of Natural Resource and Conservation, Division of Forestry for each of their land management areas.

Agricultural Income - Agricultural income is the average grazing rent on private land applied to the average forestland grazing carrying capacity found in each forest valuation zone.

Agricultural Costs - Agricultural costs are 25 percent of the gross grazing income for each forest valuation zone. This cost determination is identical to that used by the Governor's Agricultural Advisory Committee on Land Valuation.

Discount Rate - The discount rate is the interest rate that Northwest Farm Credit Services in Spokane provides to the IRS under Section 2032A to compute the special use value of farm real property.

Effective Tax Rate - The effective tax rate expresses the relationship between the forestland appraised value and the forestland tax. This is calculated by dividing the average forestland tax by the average forestland value in each valuation zone.

Productivity Grades - There are four potential productivity grades. However, Class I potential productivity rarely occurs on private forestlands in Montana. The majority of forestland sites in central and eastern Montana are designated as Class IV potential productivity.

Valuation Schedules - Montana's forest tax system contains five forestland valuation zones. There is one schedule for each forestland valuation zone. Each productivity grade in a forestland valuation schedule is represented by a single per acre value. Five valuation zones produce 20 forestland values within the State.

History of Forestland Taxation in Montana

Montana has more than 14,000 forest landowners that own approximately 3.95 million acres of forestland. In 1957, the legislature passed a law directing the State Board of Equalization to provide for a "general and uniform method of appraising timberlands." Prior to then, forestland assessment was inconsistent throughout the state. In 1959, the legislature provided funding for the Board of Equalization to develop a standing inventory tax system. Under this appraisal system, most of the private forestlands were classified and assessed in the early 1960's. Elected assessors had the choice of classifying the standing timber in their county or contracting the work to the state Division of Forestry. In 1972, the new Montana state Constitution created the Property Assessment Division of the Department of Revenue and eliminated the Board of Equalization. The department then took over responsibility for maintaining the standing inventory system and creating cyclical valuation schedules.

The 1991 legislature passed the "Forestlands Tax Act." This bill eliminated the standing inventory tax system and replaced it with the forestland productivity tax. The concept for the new tax system was borrowed in part from the state of Idaho. The Department was granted three years to develop and implement the new system. On January 1, 1994, the forestland productivity tax became effective. In 1997, the legislature made several minor revisions to the law at the request of the department.

Since 1972, the legislature has placed forestlands in several different property tax classes.

From 1963 to 1982	Property tax class 03
From 1982 to 1994	Property tax class 13
From 1994 to present	Property tax class 10

The legislature has also periodically adjusted the taxable percentage rate. The most recent change occurred in 1999, when legislation phased the taxable percentage down annually over the remainder of the 1997 reappraisal cycle. Although the taxable percentage rate has ranged from 30 percent to less than one percent, the average statewide taxable value per acre has remained stable since 1972.

Under current law, forestland reappraisal cycles are six years in duration. The reappraisal values are phased in at equal increments over the duration of the appraisal cycle.

Forestland Tax Act

In 1991, the 52nd legislature passed the Forestlands Tax Act. Many physical and economic conditions for the classification system are defined, as well as the valuation formula and each component in the formula. The law also provides for forest valuation zones, with each zone designated to recognize the uniqueness of marketing areas, timber types, growth rates, access, operability and other factors important to the valuation of forestland in that geographic area. The technical design for the productivity classification was delegated to the Department of Revenue and the University of Montana School of Forestry.

The bill is codified in 15-44-101 through 15-44-105, Montana Codes Annotated (MCA). In 1993, the department adopted administrative rules to administer this law. These rules are described in ARM. 42.20.160 through 42.20.169. In 1997, the Department added Administrative Rule of Montana (ARM). 42.20.170, that contains the forest valuation schedules.

Important forestland definitions are defined in 15-44-102, MCA. Perhaps the most important definitions are found in subsection five. This section states that forestland is:

- Contiguous forestland of 15 acres or more in one ownership
- Capable of producing timber than can be harvested in commercial quantity
- Producing timber unless the trees have been removed by man through harvest, including clear-cuts or by natural disaster
- Land that produces at least 25 cubic feet per acre, per year at the culmination of mean annual increment
- Land that has not been converted to another use

Standing timber is exempt from property taxation (15-6-201 (u) MCA). Only the bare land under the timber is eligible for assessment. If a landowner deeds his timber to another party, the landowner, not the timber owner, is responsible for the forestland property tax. The law also allows for a 50 percent reduction in the appraised value for 20 years if standing timber is destroyed by natural disasters (15-44-104, MCA).

History of the Potential Productivity Valuation System

On January 1, 1994, the department completed its first forestland reappraisal under the potential productivity valuation tax system. The conversion from a standing inventory system to a productivity system required a new valuation system. The Forestlands Tax Act of 1991 defined a productivity formula and each component of that formula.

Montana has no centralized data collection for stumpage valuation or forest costs on private lands. Therefore, in 1993, the department hired Dr. David Jackson, a forest economist with the University of Montana, to develop multiple regression models that define valuation zones and predict the average stumpage value for each zone. Dr. Jackson developed five valuation zones. The department used DNRC, Division of Forestry, legislatively budgeted costs to represent forest costs on private forestlands. These costs are related to state expenditures for forest management, timber harvest, environmental concerns, and overhead. New valuation schedules were compiled by the department and a new taxable percentage was calculated to produce a statewide taxable-value neutral reappraisal.

In 1995, the department once again contracted with Dr. Jackson to review the validity of the existing valuation zones and predict the average stumpage value for each zone. One minor change was made to valuation zones one and two for the 1997 appraisal cycle. Lake County moved from Zone 2 to Zone 1 (Jackson 1996). This change produced a better timber price differential between zone one and zone two. The change also produced a better alignment for the calculation of forest costs between the Division of Forestry - land management areas and the Department of Revenue forest valuation zones. The Department, as it did in 1994, relied on the DNRC, Division of Forestry, for legislatively budgeted costs to estimate forest costs. There were some changes in DNRC accounting practices that had an influence on the forest costs used for each valuation zone. The 1997 reappraisal produced higher assessed values because of higher stumpage values, higher grazing fees, and lower capitalization rates.

On January 1, 2003, the Department will implement its third reappraisal using the potential forest productivity tax system. Dr. Jackson reviewed the validity of the existing valuation zones and predicted the average stumpage value for each zone. He recommended no changes to the current valuation zones. Two components in the valuation formula are affected by non-market factors for this reappraisal cycle. The DNRC changed its accounting practices for budgeted accounts (forest costs) from the previous reappraisal cycle. Additionally, the Northwest Farm Credit Services in Spokane no longer calculates 15-year farm loan rates for the department. In its place, the department will use the interest rate that Northwest Farm Credit Services provides to the IRS under Section 2032A to compute the special use value of farm real property.

Potential Productivity Valuation Formula

The potential productivity formula is found in **15-44-103, MCA, Legislative intent-value of forest lands-valuation zones.** In calculating the forestland valuation schedules, the capitalized income approach to value is used. The formula is V=I/R, where:

V = per acre forest productivity value
I = per acre net income of forest lands
R = capitalization formula

The forest productivity formula can be further defined as:

$$V = \frac{(((M \times SV) + AI) - C)}{R}$$

where:

M = mean annual net wood production
SV = stumpage value
AI = per acre agricultural-related income
C = per unit cost of the forest product and the agricultural product

To conduct valuation work, income and expense data must be converted to the same dollar basis. Stumpage values are expressed in dollars per thousand board feet. Potential productivity is expressed in cubic volume. Forest costs are typically expressed as gross dollars and agricultural income is expressed as dollars per animal unit months (AUM's). Valuation schedules represent assessed values per acre, therefore all income and expense data is converted to dollars per acre.

Valuation Zones and Stumpage Valuation

The average stumpage value for each zone is developed by Dr. David Jackson, a forest economist at the University of Montana. Each valuation zone is designed to recognize the uniqueness of marketing areas, timber types, growth rates, access, operability, and other pertinent factors of that zone. Valuation zones are determined by looking at the major independent variables from state timber sales and analyzing their relationship to stumpage price. Log flows to manufacturing centers and sale population in a regression analysis are major variables considered in this process.

The average stumpage value for each forest valuation zone represents the value a willing buyer would purchase stumpage from a willing seller on non-industrial forestland. The state does not collect private timber stumpage. Therefore, average stumpage values are derived from state timber sales. Two multiple regression models are used in this analysis. One model predicts the average timber price in zones one through four. The second model predicts the average timber price in zone five. The models also determine the "best fit" to group counties into valuation zones.

Road construction, reconstruction, and maintenance are treated as logging costs, not as forest costs. Therefore, Dr. Jackson includes road costs in his stumpage valuation analysis.

The 1997 and 2003 forest valuation schedules are shown in **Table 1** of **Figure IV** on page 11.

Figure I

Table 1
Stumpage Valuation By Valuation Zone
1997 Versus 2003

	1997			2003
Valuation Zones	Stumpage Value Per MBF			Stumpage Value Per MBF
Zone 1	371.87			296.33
Zone 2	320.91			270.60
Zone 3	208.89			223.88
Zone 4	264.65			260.26
Zone 5	137.17			138.32

Table 2
Net Agricultural Income By Valuation Zone
1997 Versus 2003

	1997			2003
Valuation Zones	Net Ag Income Per Acre			Net Ag Income Per Acre
Zone 1	1.12			1.29
Zone 2	0.96			1.10
Zone 3	0.93			1.07
Zone 4	0.74			0.85
Zone 5	1.31			1.50

Table 3
Forest Costs By Valuation Zone
1997 Versus 2003

	1997			2003
Valuation Zones	Forest Costs Per Acre			Forest Costs Per Acre
Zone 1	8.55			10.89
Zone 2	6.22			9.80
Zone 3	4.43			5.25
Zone 4	4.51			3.98
Zone 5	2.73			4.07

Figure II

Table 1
Net Timber & Agricultural Income By Valuation Zone
1997 Versus 2003

1997				
Net Timber and Agricultural Income				
Valuation	Productivity Classess			
Zones	4	3	2	1
Zone 1	46.04	76.53	107.03	137.52
Zone 2	40.76	67.07	93.39	119.70
Zone 3	26.59	43.72	60.85	77.98
Zone 4	34.19	55.90	77.60	99.30
Zone 5	18.46	29.71	40.96	52.21

2003				
Net Timber and Agricultural Income				
Valuation	Productivity Classess			
Zones	4	3	2	1
Zone 1	32.92	57.21	81.51	105.81
Zone 2	30.13	52.32	74.51	96.70
Zone 3	27.95	46.30	64.66	83.02
Zone 4	34.22	55.56	76.90	98.24
Zone 5	17.29	28.63	39.97	51.31

Table 2
Forest Costs to Gross Timber Income By Valuation Zone
1997 Versus 2003

1997				
Forest Costs To Gross Timber Income				
Valuation	Productivity Classess			
Zones	4	3	2	1
Zone 1	16.02%	10.20%	7.48%	5.90%
Zone 2	13.51%	8.59%	6.30%	4.98%
Zone 3	14.78%	9.41%	6.90%	5.44%
Zone 4	11.87%	7.56%	5.54%	4.38%
Zone 5	13.87%	8.83%	6.47%	5.11%

2003				
Forest Costs To Gross Timber Income				
Valuation	Productivity Classess			
Zones	4	3	2	1
Zone 1	25.62%	16.30%	11.95%	9.44%
Zone 2	25.23%	16.06%	11.77%	9.30%
Zone 3	16.36%	10.41%	7.63%	6.03%
Zone 4	10.65%	6.78%	4.97%	3.92%
Zone 5	20.49%	13.04%	9.56%	7.55%

Table 3
Effective Tax Rate, Discount Rate and Capitalization Rate By Valuation Zone
1997 Versus 2003

1997			
Valuation Zones	Effec. Tax Rate	Discount Rate	Cap. Rate
Zone 1	0.48	9.83	10.31
Zone 2	0.54	9.83	10.37
Zone 3	0.39	9.83	10.22
Zone 4	0.36	9.83	10.19
Zone 5	0.31	9.83	10.14

2003			
Valuation Zones	Effec. Tax Rate	Discount Rate	Cap. Rate
Zone 1	0.22	8.18	8.40
Zone 2	0.26	8.18	8.44
Zone 3	0.27	8.18	8.45
Zone 4	0.22	8.18	8.40
Zone 5	0.21	8.18	8.39

Figure III

Table 1
Forest Acres By Valuation Zone
2001

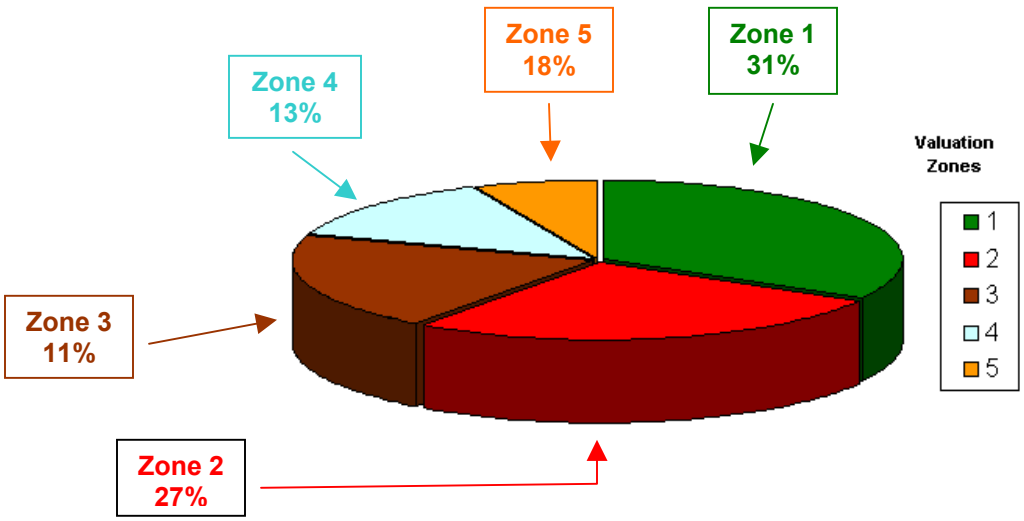


Table 2
Forest Acres By Productivity Grade
2001

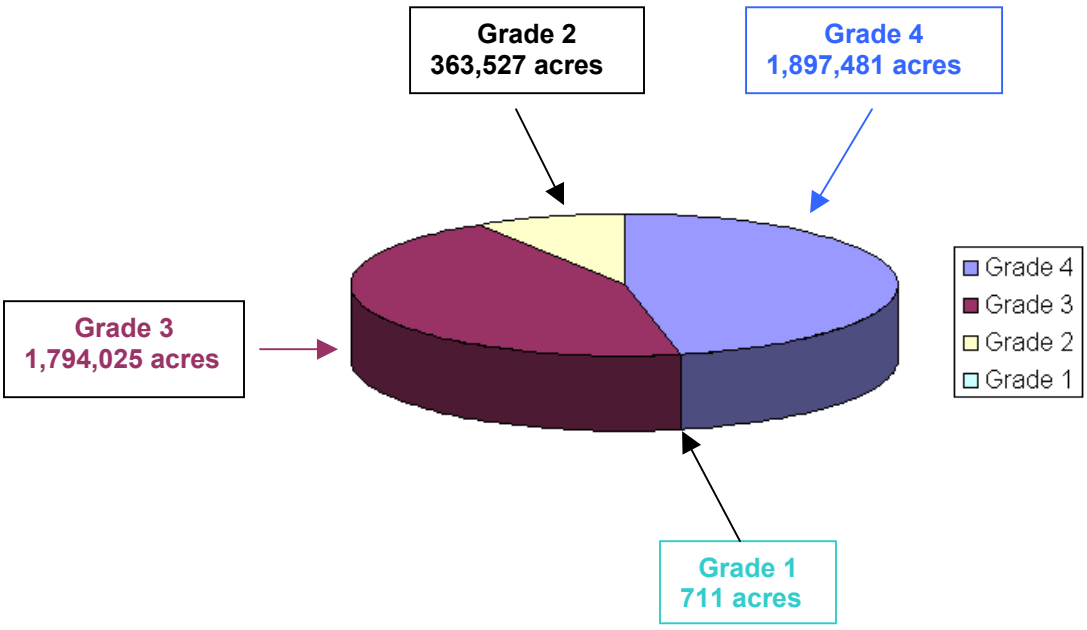


Figure IV

Table 1
Forest Valuation Schedules
1997 Versus 2003

1997					
Forest Valuation Schedule ($ per Acre)					
Productivity	Valuation Zones				
Class	1	2	3	4	5
1	1,333.82	1,154.67	762.95	974.41	514.88
2	1,038.06	900.84	595.36	761.46	403.95
3	742.30	647.00	427.77	548.50	293.03
4	446.54	393.16	260.18	335.54	182.10

2003					
Forest Valuation Schedule ($ per Acre)					
Productivity	Valuation Zones				
Class	1	2	3	4	5
1	1,259.05	1,145.39	982.23	1,168.96	611.46
2	969.92	882.57	765.03	915.02	476.30
3	680.79	619.74	547.83	661.08	341.14
4	391.66	356.92	330.63	407.14	205.98

Table 2
Valuation Change By Percent
1997 Versus 2003

Percent Valuation Change from 1997 to 2003					
Productivity	Valuation Zones				
Class	1	2	3	4	5
1	-6%	-1%	29%	20%	19%
2	-7%	-2%	28%	20%	18%
3	-8%	-4%	28%	21%	16%
4	-12%	-9%	27%	21%	13%